

A<sup>3</sup>  
first sensor for detecting the temperature of the water in the spa tub, 4) a second sensor for detecting the temperature of the ambient air around the spa, and 5) a computer programmed to process signals generated by the first sensor and the second sensor, wherein the computer selectively activates and deactivates the heating element and the at least one pump.

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In the Claims:

Please amend Claim 1 as follows:

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- A<sup>4</sup>
1. (amended) A freeze control system for a spa, comprising:
    - A. a heating element for heating the water,
    - B. at least one pump for pumping the heated water,
    - C. a first sensor for detecting the temperature of the water in the spa tub,
    - D. a second sensor for detecting the temperature of the ambient air around the spa's equipment, and
    - E. a computer programmed to process signals generated by said first sensor and said second sensor, wherein said computer selectively activates and deactivates said heating element and said at least one pump,wherein the freeze control system is for maintaining the temperature of the water inside the spa and the spa's associated piping above the freezing level.
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Please amend Claim 6 to read as follows:

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6. (amended) A freeze control system as in Claim 5, wherein said predetermined period of time is one minute.

A<sup>5</sup>  
Please amend Claim 7 as follows:

7. (amended) A freeze control system for a spa, comprising:
  - A. a heating element for heating the water,
  - B. at least one pump for pumping the heated water,
  - C. at least one air blower for blowing air into the spa tub,
  - D. a first sensor for detecting the temperature of the water in the spa tub,

a5  
E. a second sensor for detecting the temperature of the ambient air around the spa's equipment, and

F. a computer programmed to process signals generated by said first sensor and said second sensor, wherein said computer selectively activates and deactivates said heating element, said at least one pump and said at least one air blower.

wherein the freeze control system is for maintaining the temperature of the water inside the spa and the spa's associated piping above the freezing level.

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Please amend Claim 11 to read as follows:

a6  
11. (amended) A freeze control system as in Claim 7, wherein said computer is programmed to start and run said at least one pump and said at least one blower for a predetermined period of time at intervals based on the temperatures reported by said second sensor.

[Please amend Claim 12 to read as follows:]

12. (amended) A freeze control system as in Claim 11, wherein said predetermined period of time is one minute.

**Version with Markings to Show Changes Made**  
**Changes Made to the Specification**

On page 4, the following changes were made to the second paragraph:

In the present invention, sensor 3 is still part of the freeze control system in that when the temperature in spa tub 7 drops below a first predetermined value, sensor 3 sends a signal to spa controller [11] 12. This first predetermined value can be high (i.e., 104 deg. F.) for spas that get fairly regular use, or low (i.e., 59 deg. F) for example, for a homeowner who did not plan on using his spa for an extended period of time. In the first preferred embodiment, [Spa] spa controller [11] 12 is model number SSPA, manufactured by Gecko Electronique with offices in Quebec City, Quebec, Canada. Spa controller [11] 12 turns on heater 9 and water pump 13 when the temperature in spa tub 7 drops below the first predetermined value. Hot water is then pumped back into spa tub 7. Heater 9 and water pump 13 will remain on until sensor 3 reports a second predetermined temperature slightly above the first predetermined temperature. However, in the preferred embodiment of the present invention, sensor 5 is no longer part of the freeze control system. Instead, sensor 5 is used only to shut off heater 9 when the temperature at heater 9 gets too hot (approximately 119 deg. F.).

On page 5, the following change was made to the paragraph starting under the heading "Second Preferred Embodiment"

A second preferred embodiment is seen by reference to FIGS. 3, 4 and 5. In the second preferred embodiment, sensor 17 is attached directly to printed circuit board (PCB) 12A inside spa controller 12, as shown in FIGS 4 and 5. In the second preferred embodiment, [Spa] spa controller 12 is model number SSPA, manufactured by Gecko Electronique with offices in Quebec City, Quebec, Canada. By attaching sensor 17 directly to PCB 12A, a substantial cost savings is realized in that the expense of mounting sensor 17 at another location near spa 2's piping (as was shown in the first preferred embodiment) is avoided. In other words, when sensor 17 is mounted on PCB 12A, funds that would be spent on cabling, housing and connectors are saved. However, it should be noted that

when sensor 17 is mounted to PCB 12A, sensor 17 is exposed not only to ambient air temperature, but also to the temperature of the area around PCB 12A which is heated by the other components also attached to PCB 12A. Hence, a correction factor needs to be programmed into spa controller 12 to account for the heat generated by spa controller 12's components. Through experimentation for spa controller 12 model number SSPA, Applicants have determined the following correlation shown in Table 2:

On page 11, the following change was made to the paragraph under the heading "ABSTRACT":

A freeze control system for a spa [for maintaining] maintains the temperature of the water inside the spa and the spa's associated piping above the freezing level. Elements include: 1) a heating element for heating the water, 2) at least one pump for pumping the heated water, 3) a first sensor for detecting the temperature of the water in the spa tub, 4) a second sensor for detecting the temperature of the ambient air around the spa, and 5) a computer programmed to process signals generated by the first sensor and the second sensor, wherein the computer selectively activates and deactivates the heating element and the at least one pump.

### **Changes Made to the Claims**

Claim 1 was amended as follows:

1. (amended) A freeze control system for a spa [for maintaining the temperature of the water inside the spa and the spa's associated piping above the freezing level], comprising:
  - A. a heating element for heating the water,
  - B. at least one pump for pumping the heated water,
  - C. a first sensor for detecting the temperature of the water in the spa tub,
  - D. a second sensor for detecting the temperature of the ambient air around the spa's equipment, and

E. a computer programmed to process signals generated by said first sensor and said second sensor, wherein said computer selectively activates and deactivates said heating element and said at least one pump[.],  
wherein the freeze control system is for maintaining the temperature of the water inside the spa and the spa's associated piping above the freezing level.

Claim 6 was amended as follows:

6. (amended) A freeze control system as in Claim [1] 5, wherein said predetermined period of time is one minute.

Claim 7 was amended as follows:

7. A freeze control system for a spa [for maintaining the temperature of the water inside the spa and the spa's associated piping above the freezing level], comprising:
- A. a heating element for heating the water,
  - B. at least one pump for pumping the heated water,
  - C. at least one air blower for blowing air into the spa tub,
  - D. a first sensor for detecting the temperature of the water in the spa tub,
  - E. a second sensor for detecting the temperature of the ambient air around the spa's equipment, and
  - F. a computer programmed to process signals generated by said first sensor and said second sensor, wherein said computer selectively activates and deactivates said heating element, said at least one pump and said at least one air blower[.],
- wherein the freeze control system is for maintaining the temperature of the water inside the spa and the spa's associated piping above the freezing level.

Claim 11 was amended as follows:

11. (amended) A freeze control system as in Claim [1] 7, wherein said computer is programmed to start and run said at least one pump and said at least one blower

for a predetermined period of time at intervals based on the temperatures reported by said second sensor.

Claim 12 was amended as follows:

12. (amended) A freeze control system as in Claim [1] 11, wherein said predetermined period of time is one minute.